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STATE OF MONTANA

BULLETIN

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Department of Public Health

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No. 5

MONTANA STATE BOARD OF HEALTH

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HELENA, MONTANA.

Published Monthly at Helena, by the State Board of Health.

"The science of disease prevention, if properly applied, can add fifteen years to the present average length of human life."—Prof. Irving Fisher, Yale.

This Bulletin will be mailed monthly to any person in Montana upon request mailed to the Secretary of the State Board of Health at Helena.



SHEEP GRAZING AS A POSSIBLE MEANS OF CONTROLLING THE WOOD TICK (*DERMACENTOR ANDERSONI*) IN BITTER ROOT MOUNTAINS.

(By L. D. Fricks, Surgeon U. S. Public Health Service.)

Since the discovery that Rocky Mountain Spotted fever is transmitted by the bite of the wood tick, *Dermacentor Andersoni*, different measures have been proposed for the eradication of ticks.

These measures are as follows:

1. Clearing and cultivation of tillable land.
2. Burning over of foot hills and "slashings."
3. Killing of the small wild animals.
4. Dipping of domestic animals in arsenical dip.
5. Spraying and removing ticks by hand from domestic animals.

Each one of these measures has a rational basis in the economics of the tick *Dermacentor* and it is possible that any one of them, if judiciously employed over a suitable and limited territory, might eventually eliminate the tick infestation. Yet all of these methods have been attempted on the West side of the Bitter Root Valley without having solved the Spotted fever problem.

The extent and inaccessibility of the infested territory and the consequent expense of tick eradication have rendered the problem difficult. The Bitter Root territory, which harbors a virulent strain of spotted fever, is approximately one thousand square miles in extent and includes the foot hills and Eastern slopes of the Bitter Root mountains. This territory lies altogether on the West side of the Bitter Root river, but by no means includes all of the West side of the Valley. Certain areas west of the river have been entirely freed of ticks and rendered just as safe for habitation as the East side, by clearing and cultivating; and with the increasing demand for land in the Valley, all the arable land on the West side will be under cultivation within a very few years.

Burning has been preached and sporadically practiced in the Valley. It should be judiciously employed in order to destroy the greatest number of ticks and the least amount of timber. It is applicable among the foot hills and "slashings" and once begun, the territory selected should be burned over each year

following in order to prevent the growth of a tick environment even more favorable than previously existed.

The small mammals, particularly ground squirrels, because they serve as hosts for the larval and nymphal forms of the tick, and being susceptible themselves to spotted fever, and thus perpetuate the disease, have been extensively shot, trapped and poisoned in certain sections on the West side. No reasonable objection can be raised to this procedure except the expense attached to it. By securing the cooperation of the farmers in squirrel extermination, the cost can be reduced until it is no longer objectionable. Poisoned grain very early in the Spring, and the carbon bisulphide pump at other seasons are the least expensive methods of killing small mammals in the Bitter Root Valley.

The adult ticks feed and the females are fertilized almost entirely upon the large mammals, domestic and wild, and where horses and cattle are allowed to range over tick infested territory, they will perpetuate the infestation unless measures are taken to destroy the ticks which they acquire. Where the horses and cattle so allowed to range are numerous, periodical dipping during the tick season is the most feasible method known for the destruction of the ticks carried by them.

A law was recently enacted in Montana, giving authority for the dipping of such domestic animals and dipping vats are being constructed in the Bitter Root territory for this purpose. This will undoubtedly greatly reduce the tick infestation in the vicinity of farms and ranches. Wood ticks, however, are abundant in parts of the Bitter Root mountains where domestic animals never range and around the so called "goat rocks," they can be found by the million. It seems incredible that the dipping of domestic animals in the Valley will affect this infestation in the mountains, while it is not improbable that the progeny of these mountain ticks in one stage or another may be carried into the Valley from time to time by wild animals.

In studying these various spotted fever problems in the Bitter Root Valley, and the difficulties attending the different measures proposed for tick eradication, the possibility of finding some less expensive method by means of which a general offensive campaign might be carried into the mountains, was

considered at the beginning of this season's work. With this end in view an investigation of sheep grazing in the Valley was begun and on May 4th a band of sixty-one sheep was obtained for experimental purposes. The sheep were driven into tick infested territory three and a half miles southwest of Victor and divided into two bands. One band containing fifty-one sheep was allowed to graze freely over tick infested territory in care of a herder, while the remaining ten sheep were placed in a five acre pasture apparently free from ticks, and were used by having ticks placed upon them at different times.

On May 7th ten unengorged ticks were placed in the wool of each of seven sheep, and on May 9th, sixty-one of these ticks were recovered dead. On May 9th eighty-five unengorged ticks in six groups of ten, and one of twenty-five were placed on seven sheep and on May 10th, seventy-four of these ticks were recovered dead. On May 19th, one hundred and forty unengorged ticks were placed in the wool of seven sheep in groups of twenty each, and on May 21st, one hundred and twenty-three of these ticks were recovered dead.

During these experiments only two ticks, both females, were found, which attached themselves firmly to the sheep, and excepting one tick, which was found crawling on the wool of one sheep, were the only live ticks recovered. The ticks which were not recovered may have been overlooked, and if so were probably dead, as the live ticks are much more easily found; or they may have crawled off the sheep alive, or they may have died and dropped out of the wool. Certainly they were not engorged and fertilized on the sheep. On May 13th, nine days after the band of fifty-one sheep was started on the range, the sheep were examined for ticks, and the ticks removed as follows:

Dead ticks	44
Live unengorged ticks	53
Live slightly engorged ticks	15
Live, one-half to two thirds engorged ticks....	24

The majority of the unengorged ticks were found crawling on the sheep's wool and of the engorged ticks attached around the sheep's ear. Probably some of the unengorged ticks were collected by the sheep only a few hours before the examination. Forty-five of the unengorged ticks and eleven of the slightly

engorged ticks died within thirty-six hours after removal, although they were kept in moist, well ventilated boxes. On May 28th, fifteen days after the last examination, thirty-six sheep, which had been freely grazing over tick infested territory were searched and the following ticks removed:

Dead	131
Live, females up to one third engorged	13
Live females, one half to full engorged	6
Live males	12

Twelve one-half to fully engorged females were found dead and shrunk, but still entangled in the wool of the sheep. On May 31st the sheep were sheared and again turned out on the range. On June 10th they were searched and on sixty-one sheep the following ticks were found:

Dead females	5
Live females, engorged	3
Live females, partly engorged	2

On June 11th, the band of freely grazing sheep was increased to 154 by the addition of other sheep, which had been recently sheared and were known to be free from ticks. The entire band was grazed over tick infested country until June 26th, when 150 of them were searched and the following ticks recovered:

Dead ticks	33
Live engorged ticks	20
Live, partly engorged ticks	16
Live males	5

The relatively small number of ticks found after the sheep had been sheared, and the fact that only an occasional engorged tick and no dead ones were found on the lambs, make it seem probable that the majority of the ticks leave the sheep when the wool is short enough to permit them to do so.

The sheep used in these experiments were cross bred and until they were sheared were infested with the so called sheep tick, (*Melophagus Ovinus*).

SUMMARY.

1. Over 87 per cent of 295 ticks placed in the wool of unshorn sheep were recovered dead.
2. The majority of the ticks were recovered from sheep, grazing naturally over tick infested territory, were found dead.
3. Many of the engorged females recovered appeared not to

have been fertilized.

4. Comparatively few ticks, either alive or dead, were found on the sheep after they had been sheared.

It is believed that these findings warrant the continuation of the experiment by the placing of a band of 2,000 weathers on some selected range in the Bitter Root mountains as early in the Spring as possible, and steps have been taken toward this end. The selected range should be closely grazed until shearing time and then, if desired, the sheep could be sheared, dipped and transferred to the East side of the Valley without danger of carrying wood ticks, or returned to the range until the experiment is completed.

Four factors are to be considered in the sheep grazing experiments.

1. The removal of undergrowth and consequent destruction of "good tick country" by close grazing.

2. The destruction or removal of other large mammals, domestic and wild, from the sheep range.

3. The destruction of ticks themselves by the grazing sheep.

4. The placing of the problem of tick eradication in the Bitter Root mountains on an industrial basis.

COMMUNICABLE DISEASES REPORTED TO THE STATE BOARD OF HEALTH FOR THE MONTH OF JULY, 1913.

Smallpox—Broadwater, 1; Carbon, 3; Cascade (Excl. of Great Falls) 10; Chouteau, 1; Dawson, 3; Fergus, 5; Flathead, 6; Hill, 3; Missoula County, 1; Powell, 1; Stillwater, 1; Silver Bow (Excl. of Butte) 14; Butte, 4; Sheridan, 3; Teton, 2; Billings, 1; total, 59; total last month, 61.

Diphtheria—Carbon, 1; Helena, 1; Missoula City, 3; Rosebud, 1; Yellowstone (Excl. of Billings), 2; Billings, 1; total, 9; total last month, 9.

Scarlet Fever—Cascade (Excl. of Great Falls), 1; Great Falls, 1; Anaconda, 3; Dawson, 1; Fergus, 16; Bozeman, 1; Meagher, 6; Madison, 1; Powell, 1; Silver Bow (Excl. of Butte), 9; Butte, 8; Sheridan, 1; Billings, 1; total, 50; total last month, 67.

Typhoid Fever—Blaine, 2; Big Horn, 1; Great Falls, 12; Chouteau, 1; Custer, 2; Dawson, 1; Flathead, 3; Hill, 12; Helena, 6; Madison, 1; Missoula City, 1; Livingston, 1; Ra-

valli, 1; Stillwater, 1; Sheridan, 2; Valley, 1; Yellowstone, (Excl. of Billings), 1; Billings, 5; total, 54; total last month, 17.

Measles—Blaine, 2; Carbon, 3; Cascade (Excl. of Great Falls), 1; Fergus, 22; Gallatin, (Excl. of Bozeman), 1; Hill, 2; Silver Bow (Excl. of Butte), 14; Butte, 6; Teton, 1; Yellowstone (Excl. of Billings), 5; Billings, 2; total, 59; total last month, 131.

Tuberculosis—Blaine, 1; Great Falls, 1; Deer Lodge, (Excl. of Anaconda), 2; Tuberculosis Sanatorium, 5; Hill, 1; Meagher, 1; Missoula City, 1; Sheridan, 1; total, 13; total last month, 44.

Cerebro Spinal Meningitis—Broadwater, 2; total, 2; total last month, 5.

Whooping Cough—Sweet Grass, 18, total, 18; total last month, 0.

**BIRTHS (EXCLUSIVE OF STILLBIRTHS) REPORTED TO THE STATE
BOARD OF HEALTH, FOR THE MONTH OF JULY 1913, AND
COMPARATIVE BIRTH AND DEATH RECORD IN THE STATE**

	Males.	Females.....	Totals.	Deaths.	Excess of Births.	Excess of Deaths.
Beaverhead	11	6	17	3	14	..
Broadwater	3	2	5	1	4	..
Carbon	9	16	25	9	16	..
Cascade (Excl. of)	18	12	30	6	24	..
Great Falls	20	17	37	22	15	..
Chouteau	9	7	16	3	13	..
Custer	17	14	31	3	28	..
Dawson	9	9	18	6	12	..
Deer Lodge (Excl. of)	...	...	...	9	...	9
Anaconda	13	8	21	10	11	..
Fergus	21	17	38	9	29	..
Flathead (Excl. of)	9	7	16	13	3	..
Kalispell	13	7	20	6	14	..
Gallatin (Excl. of)	12	11	23	7	16	..
Bozeman	8	7	15	3	12	..
Granite	2	3	5	3	2	..
Jefferson	8	8	16	2	14	..
Lewis and Clark (Excl. of)	4	4	8	6	2	..
Helena	12	10	22	11	11	..
Lincoln	6	5	11	5	6	..
Madison	4	7	11	8	3	..
Meagher	4	7	11	2	9	..
Missoula (Excl. of)	4	4	8	12	...	4
Missoula City	15	11	26	10	16	..
Musselshell	19	13	32	10	22	..
Park (Excl. of)	1	...	1	4	...	3
Livingston	8	8	16	6	10	..
Powell	4	6	10	4	6	..
Ravalli	13	7	20	1	19	..
Rosebud	3	4	7	5	2	..
Sanders	4	2	6	3	3	..
Silver Bow (Excl. of)	23	10	33	14	19	..
Butte	43	32	75	51	24	..
Sweet Grass	7	6	13	1	12	..
Teton	8	7	15	6	9	..
Valley	7	6	13	...	13	..
Yellowstone (Excl. of)	10	6	16	12	4	..
Billings	12	18	30	10	20	..
Big Horn	3	1	4	...	4	..
Blaine	5	2	7	5	2	..
Hill	12	9	21	8	13	..
Sheridan	11	8	19	4	15	..
Stillwater	10	2	12	1	11	..
Totals	434	346	780	314	482	16

Stillbirths, 29.

**DEATHS (EXCLUSIVE OF STILLBIRTHS) REPORTED TO THE STATE
BOARD OF HEALTH FOR THE MONTH OF JULY, 1913, ARRANGED
ACCORDING TO COUNTIES AND PRINCIPAL CITIES.**

	Spotted Fever	Small Pox	Tuberculosis	Diphtheria	Scarlet Fever	Measles	Typhoid Fever	Meningitis	Whooping Cough	Pneumonia	Nephritis	Organic Heart Disease	Malignant Tumors	Acute Intestinal Diseases	Violence	Suicide	Alcoholism	All Other Causes	Totals
Beaverhead											1	1						1	3
Broadwater								1										1	1
Carbon													1					6	9
Cascade (Excl. of)			1															1	6
Great Falls			1		1		1											8	22
Chouteau			1								1				1			1	3
Custer															1			2	3
Dawson					1									1	2			2	6
Deer Lodge (Excl. of)			3							1								5	9
Anaconda								1							1			4	10
Fergus										1	3	1			1		2	5	9
Flathead (Excl. of)								1	1			2	1	1	3	1		3	13
Kalispell													1	1	1			3	6
Gallatin (Excl. of)			1						2	1		1	1		1			1	7
Bozeman											1	1	1		1			1	1
Granite											1	1			1			1	3
Jefferson											1							1	2
Lewis and Clark (Excl. of)				1								3			1			2	6
Helena			1								1	2	2	1	1			3	11
Lincoln										1					1	1		2	5
Madison												2	1		2		1	2	8
Meagher			1												1			1	2
Missoula (Excl. of)												2	1	1	7			1	12
Missoula City			1							1	2	1	1		1			4	10
Musselshell			2							1		1			1	1		4	10
Park (Excl. of)											1	1			1			2	4
Livingston							1				1	1		1				2	6
Powell															2			1	4
Ravalli															1			1	1
Rosebud											1				3			1	5
Sanders											1	1			1			3	3
Silver Bow (Excl. of)			2							1	1	1		1	4			4	14
Butte			6		1			3		3	4	3	6	2	6		1	16	51
Sweet Grass															1			1	1
Teton									1		1				1			3	6
Valley																			
Yellowstone (Excl. of)				2						1					3		1	5	12
Billings									2		1		1	1	2			1	2
Big Horn																			
Blaine			1									1			2			1	5
Hill							2								2		1	3	8
Sheridan											1			1	1			1	4
Stillwater															1			1	1
Totals			20	3	3		5	7	4	12	22	33	16	15	58	4	7	105	314

Estimated Population, 375,000.

Monthly Death Rate per 1,000 population, .837.

Annual Death Rate per 1,000 population 10.04.

**BACTERIOLOGICAL EXAMINATIONS MADE DURING
THE MONTH OF JULY 1913, BY THE STATE
BACTERIOLOGIST.**

July 1, 1913:

Blood for Widal Reaction for Dr. J. Treacy, Helena, Montana. Found: Negative.

Blood for Widal Reaction for Dr. Jordan, Twin Bridges, Montan. Found: Negative.

July 2, 1913:

Sputum for Bac. Tuberc., for Dr. Consler, Glendive, Montana. Found: Negative.

July 3, 1913.

Blood for Widal Reaction for Dr. W. C. Riddell, Helena, Montana. Found: Positive.

Pus from cavity of tooth for Actinomycosis for Dr. Ph. Cole, Helena. Found: Negative.

July 4, 1913:

Sputum for Bac. Tuberc., for Dr. S. E. Leard, Livingston, Montana. Found: Streptococci, only.

July 5: 1913:

Sputum for Bac. Tuberc., for Dr. L. Fligman, Helena, Montana. Found: Negative.

Blood for Widal Reaction for Dr. Sutherland, Sheridan, Montana. Found: Negative.

Blood for Widal Reaction for Dr. McCabe, Helena, Montana. Found: Negative.

Pus for Gonococci for Dr. Trinwith, Helena, Montana. Found: Positive.

July 6, 1913:

Sputum for Bac. Tuberc., for Dr. Ph. Cole, Helena, Montana. Found: Negative.

July 7, 1913:

Pus for Gonococci for Dr. E. A. Johnston, Helena. Montana. Found: Positive.

Sputum for Bac. Tuberc. for Dr. Ph. Cole, Helena, Montana. Found: Negative.

July 9, 1913:

Culture for Bac. Diphtheria for Dr. P. H. O'Malley, Chinook, Mont. Found: Streptococci, only.

July 11, 1913:

Blood for Widal Reaction for Dr. Sutherland, Sheridan, Montan. Found: Positive.

July 12, 1913:

Sputum for Bac. Tuberc., for Dr. M. Dean, Helena, Montana. Found: Negative.

July 15, 1913:

Blood for Widal Reaction for Dr. Porter, Fort Benton, Montana. Found: Negative.

July 16, 1913:

Blood for Widal Reaction for Dr. Wilder, Benchland, Montana. Found: Positive.

Swab for Diphtheria for Dr. L. Fligman, Helena, Montana. Found: Negative.

Blood for Widal Reaction for Dr. J. Duncan, Havre, Montana. Found: Positive.

Sputum for Bac. Tuberc., for Dr. Cockrell, Hinsdale, Montana. Found: Negative.

July 17, 1913:

Sputum for Bac. Tuberc., for Dr. B. C. Brooke, Helena, Montana. Found: Negative.

Spinal fluid for Diploc. Meningitis for Dr. Smith, Townsend, Montana. Found: Negative.

July 18, 1913:

Blood for Widal Reaction for Dr. Porter, Fort Benton, Montana. Found: Negative.

Blood for Widal Reaction for Dr. Porter, Fort Benton, Montana. Found: Negative.

Blood for Widal Reaction for Deaconess Hospital, Bozeman, Mont. Found: Positive.

July 19, 1913:

Sputum for Bac. Tuberc., for Dr. B. C. Brooke, Helena, Montana. Found: Negative.

Pus for Gonococci for Dr. W. C. Riddell, Helena, Montana. Found: Negative.

July 20, 1913:

Blood for Widal Reaction for Dr. McCann, Salesville, Montana. Found: Positive.

July 21, 1913:

Blood for Widal Reaction for D. W. C. Riddell, Helena, Montana. Found: Positive.

July 22, 1913:

Diphthtria Culture for Dr. Mott Arnold, Billings, Montana.
Found: Negative.

Diphtheria Culture for Dr. Peek, Helena, Montana. Found:
Negative.

Sputum for Bac. Tuberc., for Dr. J. Treacy, Helena, Montana. Found: Negative.

July 23, 1913:

Sputum for Bac. Tuberc., for Dr. M. Dean, Helena, Montana
Pneumococci present. Bac. Tuberc., negative.

July 24, 1913:

Blood for Widal Reaction for Dr. McCabe, Helena, Montana.
Found: Negative.

July 25, 1913:

Two Diphtheria cultures for Dr. McCoy, Joliet, Montana.
Found: One positive and one negative.

Two blood samples for Fidal Reaction for Dr. Beach, N. P.
Hospital, Glendive, Montana. Found: Both positive.

July 26, 1913:

Pus for Gonococci for Dr. W. C. Riddell, Helena, Montana.
Found: Negative.

July 28, 1913:

Two blood samples for Widal Reaction for Dr. Beach, N. P.
Hospital, Glendive, Montana. Found: One positive and
one negative.

July 29, 1913:

Blood for Widal Reaction for Dr. McCann, Salesville, Montana. Found: Negative.

Respectfully submitted,

EMIL STARZ,

State Bacteriologist.

Helena, Montana, August 1, 1913.

DIVISION OF FOODS AND DRUGS.

Dr. W. F. Cogswell, Secretary State Board of Health,
Food and Drug Commissioner.

F. J. O'Donnell, Inspector.

LABORATORY STAFF.

W. M. Cobleigh, Chemist.

C. E. Mollet, Director, Drug Analysis.

D. L. Weatherhead, Analyst.

D. B. Swingle, Bacteriologist.

Carl Gottschalck, Assistant Analyst.

Nina Armstrong, Clerk and Stenographer.

LABORATORY REPORT.

Samples Reported During the Month of July.

SUMMARY.

Classification.	Number Legal.....	Number Illegal.....	Total.....
Classification.	Legal. Number	Illegal. Number	
Milk	76	61	137
Cream	9	4	13
Unofficial	..	..	19
Water	..	..	23
Miscellaneous	7	6	13
Total	92	71	205

Two hundred five samples were reported to the Secretary of the State Board of Health, during the month of July. Of the official food samples ninety-two samples or fifty-six per cent were legal and seventy-one samples or forty-four per cent illegal.

Of the hundred sixty-three samples one hundred thirty-seven were samples of milk; seventy-six or fifty-five per cent were standard or above while sixty-one samples or forty-five per cent were illegal. Of these, twenty-six were below standard in fat, sixteen below standard in solids not fat, ten below standard in fat and solids not fat, five below standard in fat and solids not fat and contained formaldehyde, one was below

standard in solids not fat and contained formaldehyde and three contained formaldehyde.

There were thirteen samples of cream; nine or seventy per cent were standard while four or thirty per cent were below standard in fat.

There were nineteen samples of milk and cream whose analysis could not be used for official purposes.

Twenty-three samples of water were reported. They were from various parts of the State. There were several from the Livingston water supply—and several from water supplies of the Great Northern Railroad. The others were mostly single samples from various parts of the State. Of the twenty-three samples five were for chemical analysis alone; sixteen for chemical and bacteriological examination, one for mineral analysis and one for chemical and mineral analysis.

Thirteen miscellaneous food samples were reported. Five were samples of whole roasted coffee, up to the standard including net weight. Four were samples of evaporated milk. All were below standard in fat, and two were also below standard in combined fat and total solids; one was misbranded as to weight and one was misbranded as to stated content of fat. One sample was potato flour which was misbranded and adulterated. One sample was marachino cherries which were up to standard. The other two were samples of candy, one of which contained one variety which was colored with a non-permitted dye.

The detailed report of the samples follows:

MILK AND CREAM.
(Standard or Above.)
CREAM:

Lab. No.	Date.	Obtained From.	Town.	Solids. Total	NotFat Solids	% Fat
2084	7-10-13	Harry Hamaji	Hamilton .....	.....	.....	23.5
2209	7-31-13	J. A. Jones	Livingston .....	.....	.....	20.3
2212	7-31-13	J. L. Leighton	Livingston .....	.....	.....	20.0
2214	7-31-13	H. R. Kinne	Livingston .....	.....	.....	24.5
2215	7-31-13	R. W. Sheffield	Livingston .....	.....	.....	23.0
2217	7-31-13	A. P. Schunke	Livingston .....	.....	.....	20.0
2219	7-31-13	N. P. LUNCH Counter	Livingston .....	.....	.....	27.0
2223	7-31-13	Marie Hanson	Livingston .....	.....	.....	25.0
2224	7-31-13	Cliff McLeod	Livingston .....	.....	.....	20.2

MILK:

2073	7-10-13	John Kalberer	Hamilton .....	.....	.....	9.00
2074	7-10-13	M. R. Jeffrey	Hamilton	12.87	9.07	3.80
2075	7-10-13	Katherine Patullo ..	Hamilton	14.05	9.05	5.00
2076	7-10-13	C. Patullo	Hamilton	13.81	9.51	4.30
2077	7-10-13	C. Patullo	Hamilton	12.96	9.26	3.70
2078	7-10-13	F. E. Simpkins	Hamilton	14.50	9.00	5.50
2079	7-10-13	Carrie Liebel	Hamilton	13.03	9.08	3.95
2080	7-10-13	Matt Ward	Hamilton	15.46	9.06	6.40
2081	7-10-13	F. Heikkila	Hamilton	14.89	8.94	5.95
2082	7-10-13	R. H. Smithy	Hamilton	15.37	9.17	6.20
2083	7-10-13	John Corrigan	Hamilton	13.96	9.16	4.80
2094	7-14-13	Patrick Dolan	Libby	12.07	8.77	3.30
2097	7-14-13	J. S. Adwis	Thompson	12.74	8.69	4.05
2098	7-14-13	Mrs. E. Pertue	Thompson	12.37	8.57	3.80
2099	7-14-13	J. Lix & Bros.	Thompson	12.45	9.00	3.45
2102	7-14-13	Ward Hotel	Thompson	12.81	9.26	3.55
2103	7-14-13	Bob Isp.	Thompson .....	.....	.....	9.40
2105	7-14-13	Fitch-Smithers	Kalispell	12.23	8.63	3.60
2106	7-14-13	Rose Wisner	Kalispell	13.04	8.64	4.40
2107	7-14-13	White Restaurant ...	Kalispell	12.47	8.67	3.80
2110	7-14-13	Frank Harlan	Plains	12.71	8.71	4.00
2111	7-14-13	F. Royer	Plains	12.51	8.51	4.00
2114	7-14-13	M. Fitzhorn	Plains	12.66	8.56	4.10
2120	7-16-13	Gillette and Dueber ..	Cut Bank	14.22	9.37	4.85
2121	7-16-13	C. Akagi	Cut Bank	13.56	9.26	4.30
2122	7-16-13	C. H. Shaver	Cut Bank	12.53	8.93	3.60
2127	7-18-13	E. Sicolini	Butte	12.74	8.84	3.90
2130	7-19-13	Berti Bros.	Butte	12.68	8.83	3.85
2133	7-19-13	Peter Arrgoni	Butte	12.63	8.93	3.70
2134	7-19-13	A. Martini	Butte	12.53	8.68	3.85
2135	7-19-13	E. Manion	Butte	13.71	9.01	4.70
2136	7-19-13	M. Brew	Butte	12.35	8.65	3.70
2138	7-19-13	J. A. Raiman	Butte	12.66	8.66	4.00
2140	7-19-13	C. C. Accola	Butte	16.78	8.78	8.00
2147	7-19-13	Acme Dairy	Silver Bow	13.91	9.21	4.70
2148	7-19-13	John Kenoffel	Butte	12.10	8.60	3.50
2149	7-19-13	Daniel Liston	Butte	11.97	8.57	3.40
2156	7-21-13	Frank Hickman	Butte	12.56	9.06	3.50
2171	7-18-13	Interstate News	Three Forks	12.72	8.82	3.90
2172	7-21-13	Montana Cafe	Three Forks	13.53	8.98	4.55
2174	7-21-13	D. Haskill	Whitefish	13.42	9.02	4.40
2178	7-21-13	Lee Lon Wong	Whitefish	12.14	8.74	3.40
2187	7-23-13	City Restaurant	Bozeman	15.22	9.02	6.20
2191	7-23-13	Busy-Be Cafe	Bozeman	12.77	8.87	3.90
2192	7-23-13	Vienna Bakery	Bozeman	12.32	8.92	3.40
2181	7-23-13	A. E. Westlake	Bozeman	13.15	8.90	4.25
2182	7-23-13	The Bungalow	Bozeman	13.65	9.25	4.40
2183	7-23-13	The Exchange	Bozeman	12.36	9.01	3.35
2188	7-23-13	Central Cafe	Bozeman	12.87	9.27	3.60

MILK—(Continued) :

Lab. No.	Date.	Obtained From.	Town.	Solids. Total	NotFat Solids	% Fat
2190	7-23-13	Gallatin Hotel	Bozeman	13.39	9.04	4.35
2185	7-23-13	Boylen Bros.	Bozeman	12.90	8.95	3.95
2186	7-23-13	R. G. Gallup	Bozeman	12.22	8.92	3.30
2197	7-24-13	Walter Dieter	Mondak	12.60	9.20	3.40
2199	7-25-13	C. L. Council	Mondak	15.59	8.69	6.90
2195	7-31-13	Mrs. C. Soderstrom ..	Harlem	13.50	9.10	4.40
2196	7-31-13	Mrs. M. Tubbs	Harlem	13.41	8.56	4.85
2208	7-31-13	Wm. Penman	Livingston	12.84	8.94	3.90
2210	7-31-13	J. A. Jones	Livingston	19.18	8.88	4.30
2211	7-31-13	J. L. Leighton	Livingston	12.51	8.91	3.60
2213	7-31-13	H. R. Kinne	Livingston	13.36	9.06	4.30
2216	7-31-13	R. W. Sheffield	Livingston	12.55	9.30	3.20
2218	7-31-13	A. R. Schunke	Livingston	12.27	8.87	3.40
2221	7-31-13	Park Restaurant	Livingston	12.30	8.85	3.45
2225	7-31-13	Cliff McLeod	Livingston	12.09	8.84	3.25
2229	7-31-13	Busy Bee	Livingston	13.81	9.01	4.80
2230	7-31-13	Josie Kline	Livingston	12.40	9.10	3.30
2232	7-31-13	D. R. Smith	Great Falls	11.86	8.61	3.25
2236	7-31-13	Harvey McGlosson ..	Great Falls	12.61	8.71	3.90
2241	7-31-13	T. Browning	Great Falls	12.65	8.85	3.80
2242	7-31-13	E. W. Peck	Great Falls	12.22	8.67	3.55
2244	7-31-13	R. Husum	Great Falls	12.11	8.51	3.60
2245	7-31-13	William Enos	Great Falls	12.76	8.91	3.85
2246	7-31-13	Oscar Dedrickson ...	Great Falls	11.94	8.54	3.40
2251	7-31-13	Henningson Co.	Great Falls	11.97	8.67	3.30
2253	7-31-13	Wm. Grills	Great Falls .....	.....	.....	7.00
2193	7-31-13	Mrs. B. T. Savage ..	Harlem	12.76	9.01	3.75

MILK: (Below Standard).

Lab. No.	Date.	Obtained From.	Town.	Remarks.
2100	7-14-13	Hart and Pern	Thompson..	Low in fat.
2101	7-14-13	Mrs. W. Canning	Thompson..	Low in fat.
2104	7-14-13	J. W. Broadwater ...	Kalispell ...	Low in fat.
2108	7-14-13	Mrs. C. M. Walker ...	Kalispell ...	Low in fat.
2109	7-14-13	Lister's Cafe	Kalispell ...	Low in fat.
2112	7-14-13	Schroeder & Kemp ...	Plains	Low in solids not fat.
2113	7-14-13	J. La Pointe	Plains	Low in fat.
2115	7-14-13	Plains Hotel	Plains	Low in solids not fat.
2119	7-16-13	Fred Barrington	Cut Bank ...	Low in fat.
2126	7-19-13	Crescent Creamery ...	Butte	Low in fat and solids not fat.
2128	7-19-13	A. Lundgren	Butte	Low in fat.
2129	7-19-13	Paul Maier	Butte	Low in solids not fat.
2131	7-19-13	Western Creamery ...	Butte	Low in solids not fat.
2132	7-19-13	Independent Dairy ...	Butte	Low in solids not fat.
2137	7-19-13	Lyndale Creamery ...	Butte	Low in solids not fat.
2139	7-19-13	P. J. Greven	Butte	Low in fat.
2141	7-19-13	John Goddard	Butte	Low in fat, solids not fat and contains formaldehyde.
2142	7-19-13	E. J. Brennan	Butte	Low in fat and solids not fat.
2143	7-21-13	Steve Golutin	Butte	Low in fat and solids not fat.
2144	7-19-13	G. W. Bullett	Butte	Low in fat, solids not fat and contains formaldehyde.
2145	7-19-13	D. Maladin	Butte	Low in fat and solids not fat.
2146	7-19-13	Hong Kong	Butte	Contains formaldehyde.
2150	7-19-13	Louis P. Rorris	Butte	Low in fat, solids not fat and contains formaldehyde.
2152	7-21-13	Charles Nackos	Butte	Low in fat, solids not fat and contains formaldehyde.
2153	7-21-13	L. McKeon	Butte	Low in solids not fat.
2154	7-21-13	Gamer-Schwab Co. ...	Butte	Low in fat.
2155	7-21-13	H. E. Heath	Butte	Contains formaldehyde.
2157	7-21-13	James Ayers	Butte	Low in fat and solids not fat.
2158	7-21-13	Davey and Gilmore ..	Butte	Low in fat and solids not fat.
2159	7-21-13	Finlen Hotel Co. ...	Butte	Low in solids not fat.
2160	7-21-13	Thornton Hotel	Butte	Low in solids not fat.
2161	7-21-13	Leo. Heron	Butte	Low in fat and solids not fat.
2162	7-21-13	Worth Bros.	Butte	Low in fat and solids not fat.
2163	7-21-13	Castro & Dinos	Butte	Contains formaldehyde.
2164	7-21-13	Iona Cafe	Butte	Low in solids not fat.
2165	7-21-13	Bartlett and Etherington	Butte	Low in fat and solids not fat.
2166	7-21-13	Theodore Staikos	Butte	Contains formaldehyde.
2167	7-21-13	Buller Bros.	Butte	Low in fat, solids not fat and contains formaldehyde.
2168	7-18-13	Mint Restaurant	Three Forks	Low in fat.
2169	7-18-13	C. A. Burroughs ...	Three Forks	Low in fat.
2170	7-21-13	City Drug Store ...	Three Forks	Low in fat.

MILK:
(Below Standard).

Lab. No.	Date.	Otained From.	Town.	Remarks.
2173	7-21-13	Star Cafe	Three Forks	Low in fat.
2175	7-21-13	M. Hori	Whitefish ..	Low in fat.
2177	7-21-13	Lee Leck	Whitefish ..	Low in fat.
2179	7-21-13	C. H. Shaver	Whitefish ..	Low in fat.
2184	7-23-13	International Cafe ...	Bozeman...	Low in fat.
2189.	7-23-13	Bozeman Hotel	Bozeman...	Low in fat.
2198	7-25-13	Alex Lester	Mondak	Low in solids not fat.
2200	7-25-13	Mrs. John Broaten .	Mondak	Low in fat.
2201	7-25-13	J. W. Dawson	Mondak	Low in fat.
2222	7-31-13	Marie Hanson	Livingston .	Low in fat.
2226	7-31-13	Montana Cafe	Livingston .	Low in fat.
2234	7-31-13	Sewert Anderson	Great Falls.	Low in fat.
2237	7-31-13	D. Mitchell	Great Falls.	Low in fat and solids not fat.
2238	7-31-13	W. Bell Cafeteria ...	Great Falls.	Low in solids not fat.
2240	7-31-13	Great Falls Cafe ...	Great Falls.	Low in solids not fat.
2243	7-31-13	Frank Hocevar	Great Falls.	Low in fat.
2247	7-31-13	G. E. Kluge's Cafe..	Great Falls.	Low in solids not fat.
2252	7-31-13	A. J. Judd-Mint Cafe	Great Falls.	Low in fat.
2255	7-31-13	A. A. Dugdale	Great Falls.	Low in fat.
2194	7-31-13	Mrs. G. M. Stowe .	Harlem.....	Low in solids not fat.

CREAM:
(Below Standard).

Lab. No.	Date.	Otained From.	Town.	Remarks.
2220	7-31-13	Park Restaurant ...	Livingston .	Low in fat.
2227	7-31-13	Montana Cafe	Livingston .	Low in fat.
2228	7-31-13	Busy Bee Cafe	Livingston .	Low in fat.
2231	7-31-13	Josie Kline	Livingston .	Low in fat.

MISCELLANEOUS:

Lab No.	Date.	Description.	Remarks.
2000	7- 2-13	Coffee: Reinig Company, Helena, Dealer. On label, Bee Line Blended Coffee. One pound net weight. B. B. B. Roasted and packed by Reinig Co., Coffee Roasters, Helena, Mont.	Complies with standard.
2002	7- 2-13	Coffee: Reinig Co., Helena, Dealer. On Label, Bee Line Blended Coffee. One pound net weight. B. B. Roasted and packed by Reinig Co., Coffee Roasters, Helena, Mont.	Complies with standard.
2004	7- 2-13	Coffee: Reinig Co., Helena, Dealer. On Label, Bee Line Blended Coffee. B. One pound net weight. Roasted and packed by Reinig Co., Helena, Mont.	Complies with standard.
2005	7- 2-13	Coffee: Reinig Co., Helena, Dealer. On Label, Bee Line Blended Coffee. B. B. B. One pound net weight. Roasted by Reinig Co., Coffee Roasters, Helena, Mont.	Complies with standard.
2012	7- 2-13	Coffee: Reinig Co., Helena, Dealer. On Label, Weiss Cafe brand. This coffee is used exclusively by the Weiss Cafe, Helena, Mont. Roasted and packed by Reinig Co., Helena, Mont.	Complies with standard.
1979	7-28-13	Maraschino Cherries: John Mikesell, Bear Creek, dealer. On Label, Hiawatha—Red Maraschino Cherries packed for Stone-Ordean-Wells Co., Duluth, Minn. Colored with cochineal lake.	Complies with standard.
1994	7-28-13	Mixed Candy, penny goods: Elliston Cash Merc. Co., Elliston, dealers. On Label Butler Bros.	Contains one kind of candy, colored with a non-permitted coal tar dye.
1995	7-28-13	Candy, Chocolate Creams. Elliston Cash Merc. Co., dealers. On label Butler Bros., Minneapolis, Minn.	Complies with standard.
2006	7-28-13	Evaporated Milk: Reinig Co., Helena, dealers. On label: Carnation brand sterilized Evaporated Milk. Contains not less than 7.8 per cent butter fat, 23.5 solids. Average net weight, 16 ozs. Pacific Coast Condensed Milk Co.	Adulterated: low in fat and combined solids and fat and misranded.
2008	7-28-13	Sterilized Evaporated Milk: Reinig Co. Helena, dealers. On label, Van Camp's sterilized Evaporated Milk, uncolored and unsweetened. Contents, one pound cow's milk reduced to the consistency of rich cream. The Van Camp Packing Co., Indianapolis,	Adulterated: low in fats. Misranded as regards weight.
2009	7-28-13	Evaporated Milk: Reinig Co., Helena, dealers. On label, Borden's Columbian Brand, Evaporated Milk. Unsweetened and sterilized. Net weight approximately 16 ozs. Guaranteed under Food and Drug act.	Adulterated; low in fat.
2010	7-28-13	Evaporated Milk. Reinig Co., Helena, dealers. On label, Silver Cow unsweetened. Reduced to the consistency of cream. Evaporated milk. St. Charles Condensing Co., St. Charles, Ill.	Adulterated; low in fat and combined fat and solids.
2021	7-22-13	Potato Flour: W. J. Stewart, Glendive, dealer. On label, flour.	Misranded and adulterated.

WATER ANALYSIS —(Parts per Million):

Lab. No. ...	Date.....	Description.	Free Ammonia.	Albuminoid Ammonia....	Nitrogen as— Nitrite.....	Nitrogen as— Nitrate.....	Oxygen Consumed...	Chlorine.....	B. Coli.....
3066	6-27-13	Private well at Broadview ...	0.94	0.05	none	none	0.95	101.3	None in 3 cc.
2067	6-30-13	Great Northern Water Supply at Glasgow	0.037	0.16	none	trace	4.2	6.6	None in 3 cc.
2087	7- 2-13	Great Northern Water Supply at Havre	0.012	0.068	trace	0.28	2.2	30.5	..one in 3 cc.
2088	7- 2-13	Proposed water supply for Chester							

MINERAL ANALYSIS MADE.

2116	7-10-13	Great Northern Water Supply at Butte	0.052	0.13	none	none	3.45	none	None in 3 cc.
2117	7-10-13	Great Northern Water Supply at Kalispell	0.016	0.06	none	none	1.25	none	None in 3 cc.
2118	7-11-13	Great Northern Water Supply at Libby	0.024	0.036	none	none	0.8	1.02	None in 3 cc.
2020	6-23-13	Big Timber City Water	0.028	0.064	none	none	1.55	none	None in 3 Cc.
2064	6-28-13	Livingston water at intake of City Water Works	0.036	0.15	0.002	trace	0.8	2.04	Three per Cc.
2065	6-28-13	Well from which river water is pumped into Livingston mains	0.022	0.048	none	0.4	1.55	5.6	None in 3 Cc.
2068	6-30-13	Great Northern Water Supply at Medicine Lake	0.47	0.25	none	0.12	8.85	13.2	None in 3 Cc.
2096	7- 7-13	Well at Kinney Ranch	0.021	0.072	trace	0.06	0.65	2.04	
2284	7-28-13	Well at ranch of R. Christie Clyde Park	0.037	0.194	none	trace	20.7	4.6	
2123	7-16-13	Harlem City Water, pumped from Milk River	0.052	0.216	none	trace	9.45	3.05	None in 3 Cc.
2124	7-16-13	Livingston City Water at in- take from Yellowstone River	0.032	0.125	0.002	trace	0.75	7.13	10 in i Cc.

WATER ANALYSIS—(Parts per Million) :

Lab. No. ...	Date.....	Description.	Free Ammonia.	Albuminoid Ammonia....	Nitrogen as— Nitrite.....	Nitrogen as— Nitrate.....	Oxygen Consumed....	Chlorine.....	E. Coli.....
2125	7-16-13	Sampled at pumps of Livingstone City Water Company	0.02	0.144	none	0.2	1.4	6.1	One per Cc.
2180		Sample taken from cistern of J. H. Whims of Gardiner ...	0.602	0.20	0.033	0.04	3.45	0.36	
2202	6-25-13	Collected from pipe line fed by Alhambra Hot Spring	0.016	0.069	none	none	0.65	20.4	None in 3 Cc.
2204	7-28-13	Great Northern Water Supply collected from Whitefish Lake	0.026	0.046	none	none	1.65	none	None in 3 Cc.
2203		Sheridan Water Co., reservoir	0.022	0.066	none	0.32	1.9	15.3	
2284	6-30-13	Laurel Sewage Effluent							
2206	7-30-13	Sample at pumps of Livingston City Water Works	0.10	0.216	0.008	1.4	3.05	48.9	310 prob. in 1 Cc
2207	7-28-13	Yellowstone River at intake of Livingston City Water Works	0.046	0.133	none	0.2	1.25	5.09	None in 3 Cc.
			0.02	0.16	trace	0.06	2.10	4.84	

The following summary, under date of July 1, was put in the hands of the Board of Health at their last general meeting:

**GENERAL SUMMARY OF SAMPLES REPORTED FROM
THE FOOD AND DRUG LABORATORY TO THE
SECRETARY OF THE BOARD OF HEALTH
SINCE THE COMPILATION OF THE BIEN-
NIAL REPORT, NOVEMBER 15, 1912.**

Since the compilation of the last general report, five hundred fourteen (514), samples have been reported to the Secretary of the State Board of Health from the Food and Drug laboratory.

They may be briefly summarized as follows:

Milk	222
Cream	39
Butter	21
Ice Cream	14
Oleomargarine	1
Lard	4
Chinese Sauce for Noodles	1
Candy	9
Syrup	1
Catsup	1
Vanilla Extract	3
Soft Drinks	68
Canned Vegetables	6
Water	106
Unofficial Samples	18
Total	514

Of all the samples of food whose analyses are official, the following summary may be made as regards their legality:

Standard or above	57%
Adulterated	37%
Misbranded	5%
Misbranded and adulterated ..	1%

The two hundred twenty-two (222), milks were classed as follows:

Standard	102.
Low in fat	43.
Low in solids not fat	7.
Low in fat and solids not fat ..	16.

Preserved (Formaldehyde)	I.
Unofficial	53.
Total	222

The samples here listed as unofficial are samples taken by regular inspectors and sent to the laboratory for analysis. The same were analyzed as far as possible but on account of irregularities connected with the samples it was thought inadvisable to use that data for official or legal purposes. Thus some of the samples were not sealed with Board of Health seals, the seals were placed on others in such a way that the jar could be opened without affecting the seal, thus really not sealing the sample at all; some were badly churned and some were very sour. The analyses in such case being only of informational value and not such as could be used in court, the data are considered as unofficial.

There have been fifty three such samples of milk.

Of the other samples, one hundred sixty-nine, 60% are standard or above; 25% are below standard in fat; 4% are below standard in solids not fat, 9% are below standard in fat and solids not fat and one sample or about 1% contained formaldehyde. The lowest percentage of fat recorded was 0.20%.

The milk samples were collected from the different towns of the state as follows:

Butte 24	Chinook 9
Dillon 6	Bozeman 11
Valier 4	Eureka 6
Shelby 5	Choteau 9
Cut Bank 4	Whitefish 6
Miles City 7	Columbia Falls 2
Deer Lodge 6	Twin Bridges 2
Billings 13	Libby 1
Glendive 4	Conrad 5
Missoula 17	Havre 12
Hamilton 16	Victor 8
Kalispell 12	Helena 9
Three Forks 2	Whitehall 4
Livingston 12	Philipsburg 6

The thirty-nine (39) cream samples are classified as follows:

Standard or above	21
Below standard in fat	11
Unofficial	7

Thus of the samples whose analyses can be used for legal purposes, thirty-two (32), 66% are standard or above while 34% are below standard in fat.

These cream samples were collected as follows:

Livingston	10	Choteau	1
Billings	8	Dillon	2
Miles City	4	Helena	1
Roundup	1	Twin Bridges	1
Missoula	10		—
Dodson	1	Total	39

The twenty-one (21) butter samples may be classified as follows:

	Number.	Per Cent.
Standard	5	24
Misbranded (Weight)	6	29
Adulterated (Below Standard in Fat)	8	38
Adulterated and Misbranded	12	9
Total	21	100

They were collected from the following towns of the state:

Harlowtown	8	Billings.....	1
Red Lodge	1	Lewistown.....	9
Butte	2		

The fourteen samples of Ice Cream may be classified as follows:

	Number.	Per Cent.
Standard	11	79
Below Standard in Fat	3	21

They were collected as follows:

Bozeman	4	Dillon	2
Miles City	1	Helena	1
Billings	3	Red Lodge	1
Glendive	2		

One sample of oleomargarine, collected in Harlowtown was examined. It was standard.

Of the four samples of lard examined one was adulterated with beef fat. One sample was from Helena and three from Lewistown.

One sample of Chinese sauce for noodles from Helena was examined for poisonous substances and drugs—none were found.

Nine samples of candy from Helena were examined. Each sample contained very many different kinds of candy. Two samples contained one kind each which contained a non-permitted coal tar dye. All the others were all right.

One sample of mixed maple and cane syrup from Brenner was examined. It was found to comply with the standard.

One sample of catsup from Red Lodge was examined. It was found to comply with the standard.

Three vanilla extracts from Red Lodge were examined. They were found to comply with the standard except that two were labeled to contain more alcohol than they did.

The soft drinks may be classified as follows:

	Number.	Per Cent.
Standard	33	49
Misbranded	9	13
Adulterated	26	38
Total	68	100

They were collected as follows:

Missoula	3	Glendive	1
Butte	23	Great Falls	18
Red Lodge	8	Billings	8
Miles City	7		—
		Total	68

All the adulterated samples contained saccharin but one, which contained salicylic acid.

The canner vegetables, all collected in Bear Creek, may be arranged as follows:

Peas	3	Spinach	1
Beans	1	Mushrooms	1

All were standard but one can of peas which contained copper salts.

The samples listed as unofficial samples are such as are sent in by individuals and health officers for information relative to the food work.

These samples are not often sealed nor taken in such a way as to be used for legal purposes.

A list of these samples is given below:

Salt, suspected on containing poison	1
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Cream, thought to be abnormal in keeping and general properties	1
Cream	1
Suspected preserving substance	1
Butter	1
Candy	1
Canned Tomatoes	1
Cheese	1
Healing powder	1
Milk (Abnormal keeping qualities)	1
Bleaching powder (For Billings water treating plant) ..	4
Stock Solution of Bleaching powder (For Billings water treating plant)	3
Total	18

One hundred six samples of water have been analyzed, besides the foods reported above. They are classified as follows:

For Bacteriological examination only	10
For Chemical examination only	21
For both Chemical and Bacteriological examination	75

These samples were submitted for the following general purposes:

- (a) Test of city water supplies.
- (b) Test of private water supplies (wells, springs, etc.).
- (c) Test of water treating plants.
- (d) Test of water supplied to interstate carriers.
- (e) Test for pollution of water supply.
- (f) Test of sewage disposal plant.
- (g) Sanitary survey of river used for water supply.

They were collected as follows:

Virginia City	3
(Relative to possible pollution of Rochester Creek).	
Laurel	3
(Test of sewage disposal plant and also test of city water).	
Hardin	1
(Test of private well).	
Terry	1
(Test of school well).	
Big Timber	1
(Test of private well).	
Hunter's Hot Springs	1
(Hotel water reservoir).	

Spring near Great Falls	4
(To be used for drinking purposes at construction camp).	
Livingston	4
(Test of city water).	
Billings	10
(Tests of city water and of water treating plant).	
Gardiner	9
(Tests of city water and source of city water).	
Chinook and Havre	14
(Sanitary Survey of Milk River).	
Malta	23
(Test of wells in city—during Typhoid epidemic).	
Little Chicago	6
(Test of city water).	
Little Chicago and Great Falls	10
(Sanitary survey of Missouri River at this point).	
Great Falls	11
(Test of city water).	
Eureka	1
(Lake).	
Water for Interstate Carriers, C. M. & St. P.:	
Roundup	1
Alberton	1
Miles City	1

Detailed reports of all these samples of food and water are given in the various monthly bulletins of the State Board of Health.

